

**AMENDMENTS TO THE CLAIMS**

The claims in this listing will replace all prior versions, and listings, of claims in the application.

1. (Cancelled)
2. (Currently Amended) A high pressure discharge lamp lighting device ~~of~~ for supplying an AC lamp current to light up a high pressure discharge lamp, ~~characterized by providing~~ comprising:  
  
a lamp current ~~forming device of forming~~ former that forms a lamp current ~~to~~ having a waveform ~~where~~ in which one cycle of a standard period current ~~supplied at~~ with a polarity inversion of a predetermined standard period and one cycle of a short period current with a polarity inversion of a period shorter than ~~that described above are~~ the predetermined standard period appear alternately, ~~replaced with each other on every 1 period,~~ and  
  
~~optionally setting in which~~ a duty ratio before ~~and after~~ the polarity inversion for at least one of the standard ~~frequency period~~ current ~~and/or~~ and the short ~~frequency period~~ current is different than a duty ratio after the polarity inversion, and  
  
wherein the lamp current ~~forming device~~ former has a current controller ~~of setting the~~ that sets at least one of a current value before ~~and/or after the inversion of the polarity~~ inversion for ~~of~~ the short period current and a current value after the polarity inversion for the short period current to be higher than ~~the~~ a current value of the standard ~~signal period~~ current.
3. (Currently Amended) A The high pressure discharge lamp lighting device according to claim 2, wherein the lamp current ~~forming device~~ former has a waveform setter ~~of that~~ gradually increasing

increases or gradually ~~decreasing~~ decreases at least one of the current ~~value~~ values before ~~and/or~~ and after the polarity inversion ~~of~~ for the short period current ~~into~~ to form a ramp wave.

4. (Cancelled)

5. (Currently Amended) A The high pressure discharge lamp lighting device according to claim 2, wherein the current controller sets the current value of the short period current ~~is set by the current controller~~ to 1.2 times or more and 5 times or less the current value of the standard period current.

6. (Currently Amended)) A The high pressure discharge lamp lighting device according to claim 2, wherein the lamp current ~~forming device~~ former has a period setter ~~of setting~~ that sets the predetermined standard period ~~for~~ of the standard period current to 1/500 sec or more and 1/60 sec or less and that sets the period ~~for~~ of the short period current to 1/30 times or more and 1/4 times or less the predetermined standard period.

7. (Cancelled)

8. (Currently Amended) A method of lighting up a high pressure discharge lamp ~~of~~ for supplying an AC lamp current to light up a high pressure discharge lamp, ~~characterized by comprising:~~

forming the supplying a lamp current with having a current waveform where in which one cycle of a standard period current at with a polarity inversion of a predetermined standard period and one cycle of a short period current with a polarity inversion of a period shorter than that described above are the predetermined standard period appear alternately, replaced with each other on every 1

~~period, and supplying~~ while controlling a duty ratio before ~~and after~~ the polarity inversion for at least one of the standard period current and/or the short period current to being different than a duty ratio being set in accordance with the high pressure lighting light after the polarity inversion, and  
setting ~~the~~ at least one of a current value before ~~and/or after the inversion of the polarity inversion for~~ of the short period current and a current value after the polarity inversion for the short period current to be higher than ~~the~~ a current value of the standard ~~signal period~~ current.

9. (New) The method of lighting up a high pressure discharge lamp according to claim 8, further comprising gradually increasing or gradually decreasing at least one of the current values before and after the polarity inversion for the short period current to form a ramp wave.

10. (New) The method of lighting up a high pressure discharge lamp according to claim 8, wherein the current value of the short period current is set to 1.2 times or more and 5 times or less the current value of the standard period current.

11. (New) The method of lighting up a high pressure discharge lamp according to claim 8, further comprising:

setting the predetermined standard period of the standard period current to 1/500 sec or more and 1/60 sec or less and

setting the period of the short period current to 1/30 times or more and 1/4 times or less the predetermined standard period.